life must be very uncomfortable to their subjects, and a doubtful kindness. If they are to become common, mediocrity will find a new consolation.

It is impossible, however, not to admire and, knowing Ostwald, not to share the warmth of feeling which has prompted the publication of this book. It is written on the occasion of the twenty-fifth anniversary of Ostwald's graduation, and in the 120 pages Prof. Walden gives a very readable account of his subject from the age when the hero was "unser Wilhelm" up to the present time. From it we learn that the life of Ostwald has been free from any very dramatic incidents, and that, like so many eminent men, he was an ordinary boy and a not strikingly exceptional student. When once inspired by the teaching of Lemberg, he really breasted the sea of science and struck out on the course which he has followed with such success. His early career as a teacher was fraught with scanty means and imperfect appliances, but resolution, single-minded devotion and splendid ability overcame all obstacles, and have been rewarded, as we know, with every kind of success to which a true man of science may properly aspire. The book will be read with interest not only by Ostwald's friends and pupils, but by all who are interested in the foundation of the modern school of physical chemists. A. S.

The Lepidoptera of the British Islands. A Descriptive Account of the Families, Genera, and Species Indigenous to Great Britain and Ireland, their Preparatory States, Habits, and Localities. By Charles E. Barrett, F.E.S. Vol. ix., Heterocera, Geometrina—Pyralidina. Pp. 454. (London: Lovell Reeve and Co., Ltd., 1904.) Price 12*s.* net.

THE ninth volume of Mr. Barrett's great work marks substantial progress, and practically completes the Macrolepidoptera. About 180 species are described. The Geometrina include the families Larentidæ (the conclusion here given chiefly consisting of the great genus Eupithecia, of which forty-eight British species are admitted, one doubtful, but also including Eubolia and its allies, formerly placed in a distinct family), and Œnochromidæ, with only two British genera, Tanagra and Aplasta. The Pyralidina include the families Pyraustidæ, Pyralidæ, Hydrocampidæ, Endotrichidæ, Scopariidæ, Pterophoridæ, Orneodidæ, and Phycitidæ. The last family is not quite completed in vol. ix., so there now remain but the Galleriidæ, Crambidæ, Tortricina, and Tineina to be dealt with. As it is possible that these may not require to be treated in such great detail as the Macrolepidoptera, perhaps four or five more volumes may be sufficient to complete the book, which will remain as a permanent record of the work accomplished by British lepidopterists during the latter half of the last century and the opening years of the present. Among the more interesting features of vol. ix. may be noted the carefully-drawn-up table of the large and difficult genus Eupithecia, which ought much to facilitate the determination of species; and the exact records of the occurrence of the rarer species of Pyralidæ, many of which are met with, at least in Britain, only singly and sporadically at long intervals and in widely separated localities. Many interesting species, some of wide distribution abroad, have thus been added to our British lists of late years.

It will be seen that to a considerable extent Mr. Barrett still follows an arrangement similar to that of Stainton's "Manual"; it is, however, a great improvement to associate the Pterophoridæ with the Pyralidæ, as is now generally done. The Orneodidæ are a more aberrant family, and we are not sure that their real affinities have yet been finally determined.

LETTERS TO THE EDITOR.

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The Flowering of the Bamboo.

I HAVE read Mr. Tingle's letter in NATURE for August 11, as well as Prof. Farmer's comments on it, and hope you will permit me to add my remarks to the discussion of the subject.

Mr. Tingle ought to have specified which of the Chinese bamboos it is that has now flowered. According to the list given by Dr. Rendle in the recently published part of the *Journal* of the Linnean Society, vol. xxxvi., there are about forty-two species of bamboo, large and small, in China, and it would be interesting to know which of them it is. Let us hope that Mr. Tingle is sending good specimens to the Kew and British Museum herbaria. Until the species referred to has been ascertained, discussion is rather difficult, except from a general point of view.

My own experience of bamboos is confined to India, where there are more than 120 species, large and small, but I have never heard that their flowering, even when it takes place gregariously, has caused alarm among the natives. The gregarious flowering of the common species such as *Dendrocalamus strictus* or *Bambusa arundinacea* often takes place in an exceptionally dry season, when there may also be partial failure of the crops, and on such occasions advantage is sometimes taken of the general seeding to collect and use the seeds for food. Signs of approaching flowering may, perhaps, occasionally be received with misgiving as foreshadowing a dry season and bad crops, but I have never heard of their being regarded with anything approaching to superstitious terror.

So far as we know at present, some of the Indian-Burmese species only flower gregariously at long intervals, but even then there is some doubt whether the flowering is local only or widespread. The well known Kyathaungwa (*Bambusa polymorpha*), a large species with culms up to 80 feet in height and 6 inches in diameter, and notable as a common associate of the teak tree, was collected in flower by Dr. M'Clelland in Pegu in 1854, by Sir D. Brandis in the Salween in 1862, and by Mr. S. Kurz in the Sittang Valley in 1871, and flowers have once been reported since from Bassein; but in more recent years it has not flowered, though its gregarious flowering is being anxiously awaited by forest officers, who hope to use the opportunity for the extension of teak reproduction. There are some species of bamboo which flower regularly every year and do not die off: among them are the little *Arundinaria Wightiana*, so common in the forests around Ootacamund in the Nilgiri Hills; *Bambusa lineata*, a small reedy species of the coast forests of the Malay Archipelago, extending westwards only to Rutland Island in the Andamans, though strangely enough it has not, so far as I am aware, been known to produce seed; and *Ochlandra stridula*, a shrubby species of the low country of Ceylon. The great majority of species, however, have their chief flowerings gregarious, at more or less regular intervals, while every now and again a few clumps may be found in flower sporadically in almost any year. This is especially the case with *Dendrocalamus strictus*, the "male bamboo" so widespread in the deciduous more or less dry forests of India and Burma; with the thorny *Bambusa arundinacea* of the Western Peninsula; with *Dendrocalamus Hamiltonii*, the most common species of northern Bengal and Assam; and with *Bambusa Tulda* in Bengal, the east coast hills, and Burma. Gregarious flowerings may really be often quite local, though widespread enough within their locality.

When, in India, bamboos flower gregariously, they usually produce quantities of good seed, and the old clumps then die off; but in sporadic flowerings my experience is that seed is very little produced, or if produced infertile, while the clumps occasionally may recover, though rarely. Damage to a clump may often produce a partial or sporadic flowering. Information on the subject is being gradually collected in India; the dates of flowering of the different species are, when observed by forest officers,

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recorded in their journal, the *Indian Forester*, and the behaviour of the clumps is being carefully watched, especially as the dying off of the clumps of a species over large areas may mean a serious dearth for several years of the most useful material for the construction of native houses and of many articles of common domestic use. I would therefore invite the attention of those interested in the subject to the pages of the journal mentioned, and I hope Mr. Tingle and others will collect similar information in China. As regards the flowering of cultivated species in the gardens of this country, some very useful information was given by Mr. Bean, of Kew, in the *Gardeners' Chronicle* for 1903. I am not quite sure that all the flowered clumps of *Arundinaria Falconeri* will die. I have one in my own garden, and I think it is quite likely to live. I recently saw, in a neighbour's garden, a large clump of *A. Simoni* which had flowered and apparently died, but the root-stock is now studded with young green shoots, and they look as if they intended to grow. I think it is because all the culms had been cut away after the flowering.

J. S. GAMBLE.

Highfield, Liss, Hants, August 14.

The Spontaneous Scintillations of Hexagonal Blende.

A SHORT time ago I pointed out in the *Chemical News* (1904, p. 33) that scintillations, similar to those produced by a radium salt, but feebler, can always be observed in hexagonal blende, in the absence of any radium or radium-emanation.

I have recently made experiments in order to determine whether the blende itself is radio-active, and whether such inherent radio-activity is the cause of the spontaneous scintillations.

An electroscope was used with paraffin-wax insulation and a long aluminium leaf. The rate of leak was first determined, and then the effect produced on the rate by placing the blende on the brass plate of the electroscope. Two specimens from a French firm were examined in this way, and showed no effect whatever; they were spread over the plate in the form of powder.

A specimen from an English firm, in the form of a screen 4 cm. square, showed a marked effect, but a piece of writing-paper of the same size produced the same effect; consequently, no radio-activity can be attributed to the blende on the screen. All these specimens showed the scintillations distinctly, and I can only adhere to my original opinion that the scintillations are caused by a spontaneous change in the structure of the crystals.

E. P. PERMAN.

University College, Cardiff.

Sooty Rain.

I SHOULD be glad if any of your readers could explain the following phenomenon:—

It occasionally happens that on still days, usually with light northerly winds, a heavy shower of rain will carry down a black greasy deposit which forms a film or scum on this and other lakes in the district. It is a recognised nuisance to owners of pleasure boats, as, from the adhesive nature of the scum, scrubbing with soap and water is necessary to remove it.

This black deposit has been examined for me by a competent biologist, and contains no products of organic life. It has, in fact, the appearance and oily character of ordinary soot. I have seen a small handful (when dry) scraped up here from the shore. Sooty rain is the exception, and not the rule. In May last there were about eight days of sooty rain, with the wind out of the north-east. During the last three months, though the lake has risen more than a foot, there has been only one sooty rainfall, viz. on August 17, when the wind was again in the north.

Yesterday (Sunday, August 21, 4 p.m.) I had an opportunity of observing the formation of the scum, and was surprised to see how quickly it appeared. The day had been still, with heavy clouds at a considerable height coming up slowly from west-south-west, with an occasional light breeze from the north. At 4 o'clock the wind dropped entirely, and a sudden heavy shower of rain fell which lasted about fifteen minutes.

As soon as the rain began, the surface of the lake appeared broken up into faintly defined dull and bright patches, which in two or three minutes became strongly intensified without losing their original shape. The dull patches consisted of the sooty film, which was easily observable by dipping in a sheet of white paper, to which the soot adhered.

The position of the Lake District in regard to manufacturing centres renders the occurrence of sooty rain under the conditions described rather remarkable. It would be interesting, too, to know why the sooty film should not cover the surface of the water uniformly, instead of in patches. These patches, by the way, are known locally as "tarns," and are supposed to forecast a spell of bad weather.

Coniston, Lancs., August 22. J. B. COHEN.

Adaptive Colours of Eyes.

SOME time ago Prof. Wallace, of the School of Mines, Kimberley, suggested to me the possible explanation of the difference in colour of the light reflected from the iris of the eyes of different people—that it was in accordance with the natural law of protection against external influences. He pointed out that people hailing from regions where blue light is predominant—Swedes, Norwegians, and sailors, for instance—have blue eyes, whilst near the equator, or in sandy climes such as South Africa, where intense yellow light is experienced, the eyes take a rich dark yellow hue, as those of the Kaffirs and Malays, Italians and Spaniards. The Scotch have blue, the English grey, and the French dark eyes, generally speaking.

I wish to know whether this novel explanation will bear criticism under the searching light some of your readers may be able to throw on the matter.

A. VINCENT NAPIER.

Beaconsfield, Kimberley, South Africa, July 21.

An Optical Phenomenon.

SOME sixteen years ago I observed phenomena which appear to be related to those mentioned by Mr. Hillig on p. 366 of NATURE, and by Mr. Walker on p. 396. A disc, in which was a ring of holes, was rotated between the eye and the sky. I saw coloured patches and rings, changing with the velocity of rotation. The appearances vanished as the rate of rotation increased. The colours were pale green and purple. The purple flowed about as if fluid, and the green appeared as islands mottling its surface. It occurred to me that there might be some connection with the visual purple of the retina.

It would be of interest to repeat the experiments, using the different spectral colours, and varying the rates of rotation.

Intermittent stimulation of the retina may give rise to very curious and interesting results.

In the concluding chapter of Mr. Bidwell's "Curiosities of Light and Sight" will be found an account of some remarkable effects produced by intermittent illumination.

Leeds, August 27. C. T. WHITMELL.

The Constitution of Matter.

HAVING followed the almost brilliant discussions concerning the constitution of matter which took place at the recent Cambridge British Association meetings, I was not a little surprised to come across the following remarks made by Ralph Waldo Emerson in 1867. He said: "The chemists already find the infinite variety of things contained in sixty-six elements; and physicists promise that this number shall be reduced to twenty, ten, five. Faraday declares his belief that all things will, in the end, be reduced to one element with two polarities."

It would be interesting to know exactly the phraseology in which Faraday expressed this belief.

R. W. Emerson merely uses the statement to aid religious views. And yet in several of his writings he has selected almost prophetic utterances concerning science.

C. ALFRED SMITH.

King's College, London, August 29.

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